Industry and Government Strategies Related to Technical Uncertainty in Environmental Regulation: Pollution from Automobiles

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Abstract
Established industries have an inherent resistance to changing their processes and products, so when faced with potential regulated changes to reduce environmental impacts, resistance is strong and often based upon technical arguments drawn from scientific uncertainty. Detailed examination of the strategic use of technical uncertainty in the U.S. auto industry’s resistance to emissions reduction regulation and the governments efforts to assess technical feasibility offers insight into the relative effectiveness of different industry and government approaches to dealing with the technical information in regulations for environmental improvement.

The history of the auto industry’s attempts to delay development and implementation of emission reduction technologies must be understood in the context of an industry-wide, self-imposed disincentive to innovate by eliminating competition among individual firms in the 1950s and 1960s and a subsequent prohibition on collaboration following the settlement by consent decree of the 1969 antitrust civil suit alleging 16 years of industry conspiracy to prevent development of pollution control technology. Responding to the government’s aggressive regulatory attempt in the 1970 Clean Air Act (CAA) amendments to accelerate the development of pollution control devices, firms intensified their research efforts while simultaneously resisting with claims of technical uncertainty that the standards could not be met in the designated time. While the auto manufacturers took every opportunity to weaken and delay the standards throughout the 1970s, a third party of independent suppliers of catalytic converters (the primary technology considered capable of meeting the standards), provided manufacturer-conflicting testimony to regulators about the feasibility of implementing the new technology. Additionally, technological developments made by several non-U.S. auto manufacturers provided regulators with a more optimistic perspective on the technological possibilities of reducing emissions than the one promoted by the big three U.S. automakers.

This detailed empirical analysis of one major industry’s use of technical uncertainty and claims of infeasibility to resist regulatory change along with the regulator’s responses provides instructive examples of strategic government-industry interactions in the development and implementation of environmental regulations. This revisiting of the automobile industry’s interactions with the U.S. government during the early years of the emerging automobile emissions controversy, provides a valuable perspective with which to constructively assess more recent interactions of these same parties in addition to considerations of how to shape interactions of other parties during the early years of other emerging environmental issues, particularly climate change.

Summary of Presentation
Since the automobile was first implicated as a major source of urban air pollution in 1950, U.S. automobile manufacturers have resisted implementing technical changes to reduce automobile emissions. This project details strategies of both industry and government in dealing with uncertain technical information throughout the development and implementation of automobile emissions regulation and technology with particular emphasis on the pre-1980 period.

Responding to growing public concern about the health effects of Los Angeles smog, the industry made minor, simple changes in the late 1950s and early 1960s as they
simultaneously delayed further technological development to reduce emissions by creating an industry-wide “cooperative” program with a cross-licensing agreement which eliminated incentives to innovate within the industry and prevented penetration of innovations developed outside the industry. Once these coordinated stalling tactics became evident following the settlement of a 1969 antitrust civil suit brought against the industry, the federal government reacted with the 1970 Clean Air Act (CAA) Amendments, an unprecedented, stringent technology-forcing set of regulations. In this regulation, the government made a bold attempt to compensate for the lack of incentive within the industry to develop pollution control technologies, by mandating emission reductions based on public health goals of 90% below 1970 levels by the 1975 and 1976 models. Since 1970, the auto industry has taken every opportunity to weaken or delay these standards, while they have struggled to compete with the implementation of pollution control technology by some more proactive international auto manufacturers and had to contend with optimistic claims of technical feasibility from innovative firms outside the industry.

Fueled by strong public concern about air pollution and the slow pace of the industry’s technology improvements, the California state government passed the first regulation in 1960 that was designed to stimulate competition in the development of exhaust emission reduction technology and to force the automakers to meet emission standards. The U.S. government, following the lead of the California state government, passed its own legislation in 1970 with a goal of accelerating the pace of air pollution control technology development. With limited technical information, the government set ambitious and controversial emission reduction standards for one of the country’s largest and most influential industries.

Attempting to balance the U.S auto manufacturers’ persistent claims of technical infeasibility with the more optimistic perspective on feasibility of the catalytic converter manufacturers and several foreign auto makers, the U.S. Environmental Protection Agency (EPA) struggled to uphold its stringent standards in an effort to protect public health and to maintain its credibility among environmentalists. Despite their reluctance to cave in to industry pressure, the government repeatedly delayed the original standards responding to the industry’s technical and economic proclamations on the infeasibility of implementing technology to meet the standards within the original timeframe. When many US cities were still not in compliance with the ambient air quality standards in the late 1980s, Congress passed another set of CAA amendments in 1990 creating a new set of auto emissions standards and deadlines with a new focus on clean fuels within a new framework of innovative, market based approaches aimed at creating a less hostile, more cooperative industry/government relationship.

In their interactions with the government throughout this history, the auto manufacturers have attempted to balance claims of technical infeasibility with limited implementation of new technology in an effort to simultaneously postpone and weaken regulations while maintaining an image of a responsible industry committed to acquiring solutions to the problem of automobile emissions. For a detailed historical review of the technical details related to automobile emissions reduction efforts in the US and a more complete discussion of useful lessons to be learned from this case see Stephens & Parson, forthcoming (contact jennie_stephens@harvard.edu for info).
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Industry
- Resistant to change

Government
- Wants to promote environmentally beneficial technological changes

Major Issues in Scientific and Technical Information Exchange

Uncertainty

Asymmetry of information

Slide 3

Carbon Monoxide (CO)

Hydrocarbons (HC)

Nitrous Oxides (NOx)

- Federal Standards
- Pre-standard Emissions

1) 1969 end to cooperative R&D
2) 1970 CAA
3) 3-way catalytic converter
Industry Approaches to Resisting Technological Change

**Pre-1970**
- Deny or minimize the problem
- Create an industry-wide cross-licensing agreement
  - Minimize risk of competitors
  - By eliminating competition, eliminated incentive
  - Limit technology development external to industry
- Strategic implementation of modest voluntary changes
  - Publicize and promote this progress
- Emphasize challenges in developing technical solutions

**Post-1970**
- Balance efforts to delay and weaken standards with efforts to meet the standards
- Claimed technical tradeoffs, 3 pollutants, fuel economy etc
- Intra-industry differences brought technical changes

Government Strategies to Encourage Development & Implementation of Environmental Technologies

**Pre-1970**
- Supported research and development of technical solutions (particularly radical solutions industry would not explore)
- Brought anti-trust case against the industry – 1969 consent decree

**Post-1970**
- Enforce mandated standards (first federal standards 1968)
  - Attempted to assess industry claims of infeasibility
  - Since non-compliance not a possibility the industry forced the government to weaken standards
Relevance to Current Issues

- Current automobile industry
  - Electric Vehicles – 1996 anti-trust investigation

- Warning on “Cooperative research efforts” in other industries

- Technical uncertainty more difficult to deal with in adversarial government/industry relationships

- Climate change, the U.S. is still in the pre-regulatory stage, i.e. GHGs are not yet regulated
  - some companies publicizing their voluntarily efforts
Slide 8

Conclusions

Critical to productive government/industry interactions in dealing with technical uncertainty are:

- R&D framework that provides incentives for industry to innovate
  - competition, allow influence of third parties
- Balance information asymmetry
  - third parties

Adversarial relationship between government and industry amplifies technical uncertainty issues

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